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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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POLSTER, LIEDER, WOODRUFF & LUCCHESI
12412 POWERSCOURT DRIVE SUITE 200
ST. LOUIS, MO 63131-3615

EXAMINER	
CLEVELAND, MICHAEL B	
ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,847	REIDMEYER ET AL.	
	Examiner	Art Unit	
	Michael Cleveland	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *110405*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 11 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 11 and 23: While there is support for the use of the genus of solid electrolytes and the species of yttria-stabilized zirconia as the deposited ceramic, there is no support to indicate that Applicant had possession of the particularly genus of all ceramics for use as the solid electrolytes. There is no support for the term "hard" as cused in claim 11, line 5. There is no support for the phrase "in the desired order" in the penultimate line of claim 11, given that only one order is disclosed. The Examiner notes that in the original claim, no particular timing for the step of forming the second electrode was assumed.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 11-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11: The term "hard" in claim 11 is a relative term which renders the claim indefinite. The term "hard" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

reasonably apprised of the scope of the invention. For the purposes of the applying art, any ceramic has ben treated sufficiently "hard" to meet the claim limitation.

Claims 13 and 14 recite the limitation "the first surface". There is insufficient antecedent basis for this limitation in the claim. For the purposes of applying art, based on the specification, the term has been interpreted as inclusive of the "outer surface" of claim 11.

Claim 27 recites the limitation "the step of firing" in line 2. There is insufficient antecedent basis for this limitation in the claim. For the purposes of applying art, based on the specification, the term has been interpreted as inclusive of the step of "heating" of claim 11.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 11, 13-14, 18-27, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (U.S. Patent 5,716,507, hereafter '507) in view of Orlowski et al. (U.S. Patent 5,153,023, hereafter '023) and Kojima et al. (U.S. Patent 5,433,711, hereafter '711).

'507 teaches

A method of forming a coating of a precious metal on a ceramic substrate to form an automotive oxygen sensor (Abstract), comprising

forming a ceramic substrate having pores at a surface of the substrate by forming a solid thimble-shaped ceramic body (col. 1, lines 65-col. 2, line 4; col. 6, lines 5-7; Fig. 3) and

depositing a ceramic layer on an outer surface of the body (col. 1, line 65-col. 2, line 4; col. 3, lines 42-52; col. 8, lines 28-35);

heating the body to form a hard, porous ceramic layer on the outer surface of the body (col. 8, lines 28-35);

activating the porous layer on the outer surface of the body to form a plurality of particle as growth points (i.e., nucleation sites) for a conductive layer on the first surface (col. 3, lines 43-59; col. 8, lines 27-67) by forming a solution of a salt of a first metal and forming nucleation sites (col. 8, lines 36-37) and forming nucleation sites by wicking the solution into the pores at the surface of the substrate (col. 8, lines 39-48);

growing a first electrode by chemical plating a conductive layer of platinum, a precious metal, on the activated porous layer on the outer surface of the body (col. 3, lines 50-51; col. 6, lines 23-25); and

in a desired order, forming a second electrode (16) on an inner surface of the body(col. 5, lines 20-22).

'507 does not explicitly teach that the thimble-shaped ceramic body is unfired between the forming and depositing step. However, '711 teaches that it is not necessary to fire the ceramic body after forming and machining the body but before applying a coating, but instead cofiring the body with the coating in order increase the adhesion between the body and the coating (col. 9, lines 59-64; col. 17, line 50-col. 18, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the ceramic layer of '507 before the firing step in order to have increased adhesion of the coating to the ceramic body. The co-firing process would inherently have densified the body because it occurs at a temperature suitable to sintered the solid electrolyte body. (Compare '507, col. 8, lines 28-35 with col. 6, lines 5-7.)

'507 does not explicitly teach that the plating is electroless plating nor that the activating solution is in an organic solvent. However, the Examiner takes Official Notice that electroless plating from aqueous solution is a notoriously well known of performing chemical plating of metals. See, e.g., the discussion in Orlowski '023, cols. 5-6. Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to have used electroless plating from aqueous solution as the particular plating method of chemical plating of '507 with a reasonable expectation of success because electroless plating from aqueous solution is a notoriously well known method of performing chemical plating of metals.

Claims 18-22: '023 also teaches that nucleation sites to catalyze the electroless deposition reaction (col. 1, lines 15-20) may be deposited be decomposing platinum salts dissolved in acetone (col. 5, lines 41-68). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used acetone as the particular solvent of the activating solution of platinum salt of '507 with a reasonable expectation of success because '023 teaches that acetone is a suitable solution for depositing decomposable platinum salts as nucleation sites for electroless plating. Applicant discloses that acetone is a ceramic-wetting solvent (p. 6).

Claims 23-24: '507 teaches that the cermic is applied as micron-sized particles (which are both granules and a powder and therefore are a mixture of powders and granules). '507 does not explicitly teach applying the slurry by dipping. However, the Examiner takes Official Notice that dipping is a notoriously well-known method of applying slurries to substrates. The particles are zirconia particles within the disclosed size rage of Applicant's and treated at the same temperature as those disclosed by Applicant. Therefore, the shrinkage of the granules must either be inherently caused by the sintering temperature or else it is caused by essential features which are not present in the claims.

Claim 25: The nucleation sites are particles. Therefore, there must be numerous unplated areas in order to allow the formation of discrete particles. The particle diameter (and therefore the thickness of the nucleating layer) is less than 1 micron (col. 8, lines 58-67). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Claim 26: The oxygen sensor may be use as an automotive sensor (col. 1, lines 13-15). It may therefore be used as a lambda sensor.

Claim 27: '507 teaches that the sensor may be thimble-shaped with a center axial cavity (Fig. 3), and '711 teaches molding, then machining, then, coating, then firing. but does not explicitly teach compressing, drilling a cavity in the body and then firing the body. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the body by molding in a thimble, as discussed above, then machining to form the cavity, and then firing the body because '711 teaches that such is a standard, operative method of forming electrolyte bodies. The Examiner takes Official Notice that drilling is a standard method of machining to form a cavity in a body. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed drilling as the particular machining operation in order to have formed the hole of '507 because drilling is a notoriously well known machining process for forming holes.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '507 in view of Orlowski '023 and Kojima '711, as applied to claim 11, and further in view of Hardtl et al. (U.S Patent 5,843,858, hereafter '858).

'507 teaches the use of a pressure molding to form the solid electrolyte body of the oxygen sensor (col. 6, lines 5-7), but does not explicitly teach that the body is form by uniaxial compression. However, '858 teaches that solid electrolyte bodies for oxygen sensors may be formed by uniaxial compression (col. 4, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used uniaxial compression as the method of forming the body of '507 with a reasonable expectation of success and with the expectation of similar results because '858 teaches that it is an operative method of forming bodies for oxygen sensors.

9. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '507 in view of Orlowski '023 and Kojima '711, as applied to claim 11, and further in view of Hardtl et al. (U.S Patent 3,562,911, hereafter '911).

'507 and '023 are discussed above, but do not explicitly teach the use of a solution of hexachloroplatnic acid and hydrazine as the particular electroless plating solution. However, '858 teaches an operative electroless platinum plating solution containing hexachloroplatinic acid and hydrazine (col. 1, lines 17-29, col. 2, line 70-col. 3, line 5; and col. 2, lines 43-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the solution of '858 as the particular plating solution of '507 and '023 with a reasonable expectation of success and with the expectation of similar results because '911 teaches that it is an operative electroless platinum plating solution.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 11 and 13-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,315,880, hereafter '880. Although the conflicting claims are not identical, they are not patentably distinct from each other because current independent claims 11-30 represent different combinations of

the features and intended uses of claims 1-10 of '880. One of ordinary skill in the art would have looked to the specification for a definition of "forming" as used in claim 11, "activating" as used in claim 11 and "unstable" in claim 14, and would have discovered the suitable features of the exemplary forming, activating, and electroless plating solutions that are claimed in claims 11 ("unfired"), 14-18, 23-24, 26, and 29-30.

Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,315,880 in view of Hardtl '858 for the further reasons given regarding claim 12, above.

Response to Arguments

12. Applicant's arguments filed 11/4/2005 have been fully considered but they are not persuasive.

Applicant's arguments regarding the prior rejection under 35 USC 112, 1st paragraph are convincing in view of the amendments and the citation of p. 6 as support for "volatile solvents". However, the amendments to the claims introduce new issues under 35 USC 112, 1st paragraph.

Applicant's arguments regarding the prior rejection under 35 USC 112, 2nd paragraph are partially convincing in view of the amendments to claim 11. However, the issue of antecedent basis remains in claims 13 and 14. Also, the amendments to the claims introduce new issues under 35 USC 112, 2nd paragraph.

Applicant questions the use of FP 7-20-02 (paragraph 6 of the prior action). The paragraph MUST be present in all Office Actions for applications by involve joint inventors. See MPEP 706.02(m) for further detail.

Applicant's arguments that '507 teaches firing the substrate before applying the coating, contrary to the limitations of claim 11 as amended, are unconvincing in view of the teachings of newly cited Kojima '711.

Applicant's arguments regarding the double patenting rejections fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hedgcoth (U.S. Patent 4,735,840) is cited for its teachings regarding nucleation layer thicknesses (col. 5). Kitt et al. (U.S. Patent 4,101,403) is cited for its teachings regarding use of oxygen sensors to monitor lambda in automobiles.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Cleveland
Primary Examiner
Art Unit 1762

12/30/2005